

## CLAIMS

### What is claimed is:

1. A system for predicting the lapping property of a lapping plate, comprising:  
a rotatable platform;  
a lapping plate mounted to the rotatable platform for rotation therewith;  
a holder having a specimen mounted thereto and positioned on the lapping plate;  
a fixture positioned adjacent to the lapping plate, the fixture having a stationary base, an arm mounted to and extending away from the base toward the lapping plate, and a guide feature mounted to the arm for contacting and supporting the holder with respect to the lapping plate;  
friction detection means mounted to the fixture for measuring frictional force between the lapping plate and the specimen; and  
a distance sensor mounted to the holder for detecting a gap distance between the distance sensor and the lapping plate.
2. The system of claim 1, wherein the lapping plate rotates for a specific time so that adequate removal of material from the specimen occurs, and a lapping rate is determined from a change in the gap distance over a time interval, and the lapping rate and friction are then assessed to determine if the lapping plate is acceptable.
3. The system of claim 1, wherein the system determines a lapping rate of the lapping plate under a fixed load and a fixed rotation speed, such that a coefficient of friction and a Preston coefficient of the lapping plate can be calculated.
4. The system of claim 1, wherein the distance sensor is a non-invasive sensor.
5. The system of claim 4, the distance sensor is an inductive distance sensor having a sensitivity of approximately 100 nm for a 10 mV sensor output.

6. The system of claim 1, wherein the guide feature comprises a set of guide wheels that keep the holder in place when the lapping plate is rotating.
7. The system of claim 1, wherein the specimen comprises a plurality of specimens that are symmetrically spaced apart about the distance sensor.
8. The system of claim 1, wherein the lapping plate is charged with abrasive.
9. The system of claim 1, wherein the specimen is formed from a material used to fabricate sliders.
10. The system of claim 1, further comprising a weight added to a top of the holder so that the specimen and the lapping plate experience a pressure that is analogous to a slider lapping pressure.
11. The system of claim 1, wherein the friction detection means is mounted to the arm.
12. The system of claim 1, wherein the friction detection means is a strain gage.

13. An apparatus for predicting the lapping property of a lapping plate, comprising:  
a rotatable platform adapted to support a lapping plate thereon for rotation therewith;  
a holder having a specimen mounted thereto and adapted to be positioned on top of the lapping plate;  
a fixture having a stationary base, an arm mounted to and extending away from the base, and a guide feature mounted to the arm for contacting and horizontally supporting the holder with respect to the lapping plate;  
friction detection means mounted to the fixture and adapted to measure frictional force between the lapping plate and the specimen;  
a distance sensor mounted to the holder and adapted to detect a vertical gap distance between the distance sensor and the lapping plate; and  
the rotatable platform being adapted to rotate the lapping plate for a specific time so that adequate removal of material from the specimen occurs, and a lapping rate is determined from a change in the gap distance over a time interval, and the lapping rate and friction are then assessed to determine if the lapping plate is acceptable.
14. The apparatus of claim 13, wherein the apparatus is adapted to determine the lapping rate of the lapping plate under a fixed load and a fixed rotation speed, such that a coefficient of friction and a Preston coefficient of the lapping plate can be calculated.
15. The apparatus of claim 13, wherein the distance sensor is a non-invasive sensor.
16. The apparatus of claim 15, wherein the distance sensor is an inductive distance sensor having a sensitivity of approximately 100 nm for a 10 mV sensor output.
17. The apparatus of claim 13, wherein the guide feature comprises a set of guide wheels that keep the holder in place when the lapping plate is rotating.

18. The apparatus of claim 13, wherein the specimen comprises a plurality of specimens that are symmetrically spaced apart about the distance sensor.
19. The apparatus of claim 13, wherein the specimen is formed from a material used to fabricate sliders.
20. The apparatus of claim 13, further comprising a weight added to a top of the holder so that the specimen and the lapping plate experience a pressure that is analogous to a slider lapping pressure.
21. The apparatus of claim 13, wherein the friction detection means is mounted to the arm.
22. The apparatus of claim 13, wherein the friction detection means is a strain gage.